

season is longer here than that of the cheese factory; 4th, owing to the shortness and to the inefficiency of our herds, the average volume of our product per cow is also deficient. But there is no reason whatever why our cheese factories should not be kept open during a period of six months. Some of our creameries have already reached that figure. It is only a question of larger herds, improved and better fed in the fall of the year. With regard to the financial condition of these factories I know that most of them are doing very well, and that all of them are in a hopeful condition.

SPECIAL FEATURES OF THE SEASON, 1891.

A most detrimental feature of the season, 1891 was the prevalence of abortion and sterility in some dairy districts, causing considerable loss to farmers. I trust that such important subjects as abortion and sterility in cows will be treated during the present convention, thoroughly studied by specialists during the present year, and that something will be done to prevent the re-currence of such troubles. The dairy exhibition was a success. It brought together a large quantity of dairy goods. Dairymen and farmers had a grand opportunity of judging the quality of butter and cheese, of comparing the skill of dairy operators and also the fitness of the different parts of these western provinces to dairy farming. We were particularly pleased to see our western friends turn out in such numbers and carry off so many prizes. It showed that they are not lacking in enterprise or skill, and that the rolling western prairie with its sparkling water and excellent grasses offers unequalled facilities for butter production. Creamery butter has sustained its acquired reputation, but it was fully demonstrated that very little of our cheese production could be rated as first class, and that it requires immediate improvement. The main defects are: Too much acid and defective flavor. These defects are due mainly to over ripe and tinted milk, for which our factory patrons are responsible. No amount of science, experience and skill on part of the cheese makers will overcome the effects of carelessness and filth on the part of the milk producer. Under the pretext of cool nights and that the milk will keep sweet until morning, our average factory patron evades milk aeration entirely. Yet milk requires at least as much aeration on a cool as on a warm night, for during a cool night a quantity of cream will soon rise to the surface of the milk, thus closing the aperture through which foul odors might escape. A great deal of educational work needs to be done in this connection, and I trust it will soon be undertaken through the channel of our Farmers' Institutes, etc.

IMMEDIATE NEEDS OF DAIRYING.

1st. We are in need of a good exhibition building, but before such building is erected, I hope the exhibition board of directors will consult the Dairyman's Associations views regarding its requirements; 2nd, we are in need of legislation to protect our dairy industry; 3rd, we are in need of an experimental dairy station. Nearly every province of this Dominion has been favored with such institution. I trust that something of that kind will be organized during the present year; 4th, we are in need of dairy instructors and also of a committee of dairymen to advise them. Last year we were favored by the visit of two instructors sent out by the Dominion Government, to which we should give some expression of gratitude. These instructors being well qualified, did their work well. Had they been advised by a committee of dairymen, they would have done still better particularly in the matter of factory and milk inspection. I would therefore suggest that our secretary be instructed to write the honorable minister of agriculture, Ottawa, a letter containing the expression of our gratitude for the sending of these instructors and asking the continuance of such favors, but at the same time expressing our desire that these instructors, on their arrival here, meet a committee of dairymen especially appointed for this and other purposes, and

advise as to the ways and means of doing their work so as to accomplish the most good.

THE DISCUSSION.

A discussion took place on the points brought out by Prof. Barre after he had concluded the reading of his paper. Among other points discussed were: The relative advantages of making butter and cheese, and the importance of succulent foods in the fall, such as rape, mangelwurz, green oats, etc. Other matters important to the improvement of the dairy were also strongly enforced. The subject of abortion and sterility in cows also elicited an interesting discussion.

Population of the Earth.

In 1866 Bohm estimated the population of the earth at 1,350,000,000. In the sixth issue (1880) of the *Bevolkerung der Erde* the number had apparently grown to 1,450,000,000, showing an ostensible increase of 100,000,000 in fourteen years. But this difference was really due to more accurate statistics and estimates rather than to actual growth. It was somewhat alarming, however, when in the 1882 issue the total population of the earth appeared as 1,434,000,000, showing a seeming decrease in two years of 22,000,000. But this was largely accounted for by the fact that new investigations compelled the reduction of the estimated population of China from 405,000,000 to 350,000,000. The estimate reached in the present issue of 1891 for the total population of the earth is 1,480,000,000, showing an increase of 40,000,000 over the estimate for 1882, being at the rate of 5,750,000 per annum. This estimate is 3,000,000 less than that of Levasseur in 1886, partly due to the fact that Levasseur took higher estimates of the population of China and of Africa than have Wagner and Supan. But as the data for a very large area of the inhabited globe are to a considerable extent based on guesswork, it is no wonder that estimates should differ, and that we cannot be sure of the population of the world to within 50,000,000, possibly 100,000,000 either way.

In 1880 Professor Wagner found that, of the total population in that year, precise data based on actual enumeration (censuses or registration) were available for only 626,000,000 out of 1,401,000,000—that is, 44 per cent of the total. This population has meanwhile increased to 736,000,000 (though the increase in some cases is only apparent); to this must be added 99,000,000, for which, since 1880, exact enumerations have been substituted for vague estimates. This gives 835,000,000 out of the total of 1,480,000,000 of people—i. e., between 56 and 57 per cent—of whom fairly precise enumerations have been taken. True, in this is included 113,000,000 (the population of the Russian Empire) of whom a general census, in the modern sense of the term, has not been taken, except in the case of one or two provinces.

Although, when the figures are looked at by themselves, there has apparently been an increase of population since 1880 of 125,000,000, as a matter of fact the difference between the estimated population of 1880 (1,401,000,000, after deducting the excess credited to China), and that of 1891 (1,480,000,000), is only 79,000,000. This apparent decrease in the rate of growth is really due to the reductions which the editors have felt bound to make on the basis of more careful investigations in the estimates of the population of certain regions. Thus, they have reduced the population of Africa by 38,000,000, while in Asia a deduction of 15,000,000 has been affected. All this shows how conscientiously and critically the editors have gone about their laborious task, and leads us to place the more confidence in the results. Even in Europe there are considerable differences between the areas now accepted and those given in previous issues; the population statistics have been changed throughout.

The following table gives the area and population of the great divisions of the earth's surface according to the latest data:

	Square Miles.	Population.	To 1 Sq. M.
Europe a	3,760,860	357,370,000	94
Asia b	17,630,080	825,954,000	47
Africa c	11,277,304	103,035,000	14
America d	14,801,402	121,713,000	8
Australia e	2,991,442	3,230,000	1
Oceanic Islands	753,120	7,420,000	10
Polar regions	1,730,810	80,400	..

Total 62,821,934 1,479,729,400

a Without Iceland, Nova Zembla, Atlantic Islands, etc.
b Without Arctic Islands. c Without Madagascar, etc.
d Without Arctic Regions. e The Continent and Tasmania.—*London Times*.

Experimental Farm Tests.

Following is the paper submitted at a farmer's meeting at Brandon, by Manager Bedford, of the Manitoba experimental farm, which we consider of such importance as to be deserving of a wide circulation:

With the short season at the disposal of the Manitoba farmer it is natural for him to adopt the most rapid means of carrying on his work, and for that reason he is constantly seeking for more perfect machinery and readily adopts any new scheme for the culture of his land or the rushing in of the seed in the spring. This explains to a large extent why the spade and disc harrows, the Galtling gun and light running broadcast machinery have met with such a large demand of late years, but I think it was proven at our last meeting that this rapid and in many cases superficial work may result in direct loss and disappointment to the farmer. The directors and officers of the experimental farms, anxious to further the interests of the farmer are always pleased to test the different modes of cultivation and to try promising farm machinery. To that end tests are being made every year with the most improved drills, harrows, etc. At our last meeting the result of a test with the disc harrow against plowing was given. This week we will give the result of our 1891 test with drills, and also our test of thick and thin seeding. Last year you will remember the drill test included wheat, oats, and barley, but this year the plots of oats in the test were so badly injured by frost that we have left them out altogether. Wheat with the common drill gave 33 bushels, 20 lbs. per acre; press drill, 23 bushels, 50 lbs.; broadcast machine, 22 bushels, 10 lbs. You will notice that the common drill gave 4 bushels more than the press drill and 11 bushels 10 lbs. more than the broadcast machine. This result is the same as last year only more emphatically in favor of the drills. Barley sown with the press drills gave 55 bushels, 10 lbs. per acre; common drill, 50 bushels, 30 lbs.; broadcast machine, 42 bushels, 14 lbs. The press drill you will notice takes the lead with barley, the yield being 4 bushels, and 23 lbs. more than the common drill and 12 bushels and 44 lbs. more than the broadcast machine. This is also the same result as last year, when the press drill took the lead with barley. In conclusion I might say that every year and on all parts of the experimental farm, the drilled sowed grain has given the largest yield. We have spoken of the "kind of machine" to work with, we will now touch on the question of "the quantity of seed to be sown." Fifteen plots were devoted to this experiment during the past season; 5 plots to each of the leading kinds of grain. Four pecks of wheat sown with the common drill gave 33 bushels, 20 lbs. per acre; 5, 36 bushels 25 lbs; 6, 38 bushels, 55 lbs.; 7, 39 bushels, 51 lbs.; 8, 39 bushels, 05 lbs. You will see that 7 pecks of wheat per acre has given the largest yield. This is the same as last year's experiment and it is evidently the proper quantity for land similar to that on the experimental farm. Nine pecks of oats and 7 pecks of barley have given the best results both years, and these quantities would appear about right for land similar to that on the farm.